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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,990	11/14/2003	Won-Jun Koh	1572.1210	7361

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EXAMINER
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BOATENG, ALEXIS ASIEDUA

ART UNIT	PAPER NUMBER
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2838

DATE MAILED: 08/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/706,990

Applicant(s)

KOH ET AL

Examiner

Alexis Boateng

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/14/03</u> . | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-12, 16 –20, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaite (U.S. 6,016,046) in view of Shirai (U.S. 5,550, 452) and in further view of Park (U.S. 6,683,438).

**Regarding claim 1**, Kaite discloses a charging system to charge a battery of a robot, comprising: a charger (fig. 2 item 101);

a first charging part provided in the charger (fig.2 item 115) and including a high-frequency current generator (fig. 2 item 116) to rectify commercial power and to convert the rectified power into a high frequency square wave signal (fig 2 item 118), a primary induction coil (fig. 1 item 113) to generate an electromagnetic field by the high frequency square wave signal supplied from the high frequency current generator, and a first terminal part to emit the electromagnetic field created by the primary induction coil and;

a second charging part (fig. 2 item 120) provided in the robot and including a second terminal part to mate with the first part, a secondary induction coil (fig. 2 item 114) to generate an induced current by the electromagnetic field emitted from the first

charging part and a DC converter (fig. 2 item 122) to rectify the induced current generated from the secondary induction coil and to supply DC power to the battery.

Kaite does not disclose wherein an elastic member elastically deformable when the robot physically contacts the charger being angled against a docking direction. Shirai discloses in figures 1A and 1B, a terminal member, item 78, elastically deformable when the robot contacts the charger. At the time of invention, it would have been obvious to a person of ordinary skill in the art to design the Kaite system with a terminal member, which is movable by an elastic member so the charging apparatus is only turned on with the proper device and does not erroneously waste charging current on any metal object that comes into contact with the charger. Kaite nor Shirai disclose the remainder of the claimed invention. Park discloses in figure 1 wherein item 300 is a protrusion located on the device and item 100 contains a protrusion accommodating part. At the time of invention, it would have been obvious to a person of ordinary skill in the art to modify the Kaite and Shirai system so that device and the charger can be easily fit together to maintain proper charging.

**Regarding claim 2 and 3,** Kaite does not disclose wherein the first terminal comprises: a terminal member movable relative to the charger; and an elastic member interposed between the terminal member and the charger. Shirai discloses in figures 1A and 1B, a terminal member, item 78, movable relative to the charger. Shirai further discloses an elastic member interposed between the terminal member and the charger, item 106. At the time of invention, it would have been obvious to a person of ordinary skill in the art to design the Kaite system with a terminal member, which is movable by

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an elastic member so the charging apparatus is cushioned during contact, which protects the charger from early wear and damage.

**Regarding claims 4, 5, 7, 8, 10, and 11,** Kaite does not disclose wherein a protrusion and a protrusion accommodating part provided in the second terminal part and the first terminal part, respectively, so that the robot can contact with the charger within a charging position. Kaite also does not further disclose wherein at least one of the protrusion and the protrusion accommodating part is provided with guiding slants. Park discloses in figure 1, item 300 and 100, a protrusion and a protrusion accommodating part where both contain guiding slants, which can be implemented to secure the fit of the charger and the device. At the time of invention, it would have been obvious to a person of ordinary skill in the art to have a protrusion part and a protrusion accommodating part, both with guiding slants, so that the device is guided to the charger and so the device fits securely during charging.

**Regarding claims 16 and 17,** Kaite does not disclose wherein the elastic member comprises: a spring elastically deformable to absorb shocks when the protrusion is accommodated in the protrusion accommodated part. Shirai discloses in figure 4 items 104, 78 and 106, a spring elastically deformable to absorb the shocks when the protrusion, 78 and 104, is accommodated in the protrusion 102, so that the coils are protected from damage during the process of charging. At the time of invention, it would have been obvious to a person of ordinary skill in the art to implement shocks that are elastically deformable to absorb shocks so that the coils are covered and protected during the process of charging.

**Regarding claims 6, 9, 12, 18, 19, and 20** Kaite does not disclose wherein the protrusion is accommodated in the protrusion accommodating part, leaving a margin in which the protrusion is movable in a direction vertical to a docking direction. Shirai discloses in figure 4, items 100 and 102 the protrusion and the protrusion accommodating part where the protrusion is movable in the docking direction. At the time of invention, it would have been obvious to a person of ordinary skill in the art to implement a movable protrusion and protrusion accommodating part so that it is easier to achieve the charging process and the charger is protected from damage.

**Regarding claim 27,** Kaite discloses wherein the battery of the robot is charged without electrical contact between the robot and the charger (column 1 lines 9 thru 12)

2. Claims 13 - 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaite (U.S. 6,016,046) in view of Shirai (U.S. 5,550, 452) and in further view of Park (U.S. 6,683,438), as applied to claim 1, and in view of Fernandez (U.S. 6,184,651).

**Regarding claims 13 - 15,** Kaite does not disclose wherein a charging controller provided in the second charging part to transmit a control signal to the charger. Kaite does not further disclose wherein the first charger comprises: a first wireless communication part to allow communication between the charger and the robot; and a power controller to control an inverter of the high-frequency current generator in response to the control signal transmitted from the charging controller through the first wireless communication part. Fernandez discloses in

figure 3, item 47 a communication controller in the second charging part, which controls the charging by transmitting a control signal to the charger. Fernandez further discloses in figure 3, item 39 a radio transceiver, which uses wireless communication to communicate between the charger and the device. Fernandez further discloses in figure 3 item 11 a primary controller controls the charging. At the time of invention, it would have been obvious to a person of ordinary skill in the art to implement a charging controller, which transmits signals to the charger using wireless communication, so that charger does not overcharge the battery and so that the communication is not confined to a limited range of usage.

3. Claims 21 thru 26 rejected under 35 U.S.C. 103(a) as being unpatentable over Kaite (U.S. 6,016,046) in view of Osawa (U.S. 6,764,373).

**Regarding claims 21 thru 26,** Kaite does not disclose wherein the protrusion and the protrusion accommodating part are provided so that the robot contacts the charger within a charging position even if a position of the robot is not precisely controlled. Kaite does not further disclose wherein the battery of the robot is charged even when the position of the robot is not precisely controlled. Osawa discloses in figure 14, item 85 the protrusion is used to charge the robot. Osawa further discloses in column 21 lines 23 thru 29 that electrical connection is made in any position because no severe accuracy is required for electrical connection alignment. At the time of invention, it would have been obvious to design the system so that charging is performed with a large margin for error

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because it is easier to begin charging when the charging is not restricted to a small margin of space.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexis Boateng whose telephone number is (571) 272-5979. The examiner can normally be reached on 8:30 am - 6:00 pm, Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Karl Easthom can be reached on (571) 272-1989. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AB

  
KARL EASTHOM  
SUPERVISORY PATENT EXAMINER